### (19) World Intellectual Property Organization International Bureau



## 

(43) International Publication Date 7 July 2005 (07.07.2005)

**PCT** 

# (10) International Publication Number WO 2005/061397 A1

(51) International Patent Classification7:

C02F 3/28

(21) International Application Number:

PCT/US2004/038808

(22) International Filing Date:

19 November 2004 (19.11.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 60/523,637

20 November 2003 (20.11.2003) US

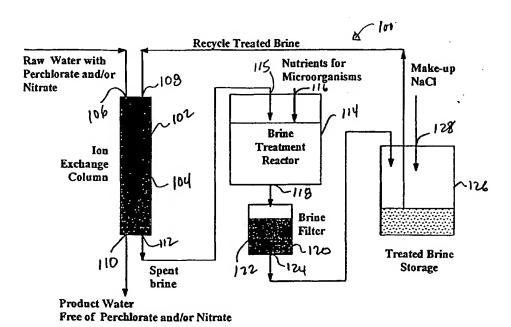
- (71) Applicant (for all designated States except US): THE UNIVERSITY OF HOUSTON SYSTEM [US/US]; The University of Houston, Assoc, Gen. Counsel, Off. IP Management, 316 E Cullen Building, Houston, TX 77204-2015 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): ROBERTS, Deborah, J. [US/US]; The University of Houston, Engineering

Bldg., Rm N115, 316 E Cullen Building, Houston, TX 77204-2015 (US). CLIFFORD, Dennis, A. [US/US]; The University of Houston, Bldg. D. Rm N110, 316 E Cullen Building, Houston, TX 77204-2015 (US). LIN, Xiaohua [CN/US]; The University of Houston. Engineering Bldg., Rm N115, 316 E Cullen Building. Houston, TX 77204-2015 (US). GILLOGLY, Thomas [US/US]; MWN Global, Inc., 300 N. Lake Avenue, Suite 1200, Pasadena, CA 91101 (US). ALDRIDGE, Lee [US/US]; MWH Global, Inc., 300 N. Lake Avenue, Suite 1200. Pasadena, CA 91101 (US). LEHMAN, Stewart [US/US]; MWH Global, Inc., 300 N. Lake Avenue, Suite 1200, Pasadena, CA 91101 (US).

- (74) Agent: STROZIER, Robert, W.; P.O. Box 429, Bellaire, Texas 77402 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,

[Continued on next page]

(54) Title: METHOD FOR STABILIZATION OF BIOLOGICAL CULTURES TO ALLOW BIOLOGICAL TREATMENT OF BRINES



(57) Abstract: A process is disclosed for the biological treatment under anaerobic/anoxic conditions for the degradation of pollutants present in brine solution used in waste water management, in industrial waste brine solutions and in waste oil field brine solutions, especially waste brine solutions contaminated with perchlorate and nitrate. A culture capable of reducing perchlorate and nitrate in spent ion-exchange regenerant brine containing at least 30 g/L NaCl under anaerobic/anoxic conditions was used to demonstrate the process. A stabilized brine solution is also disclosed in which a culture capable of degrading a given pollutant can be proliferate.

## 

PH. PL, PT. RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM. TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM). European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR). OAPI (BE BJ, CF, CG, CL, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

#### Published:

- with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.